

Slide 1 – TileMill Teaser

- Discuss Hannah Hurtzig interview from Designing Universal Knowledge

Slide 2 – The Draftsman

- Purpose of today's informal talk is not to come across as a software salesman
- Thus far in semester we've examined important precedents in historical visualization and identified some strategies for information design, this is moment in semester when we start to put on our 'designer' hats and worry about making stuff
- This image is a tiny reminder that delineation can and does happen everyday without computers, and many of the most important precedents in visualization were created with pen and pencil.

Slide 3 – Mark Lombardi

- Amercian Conceptual artist – known for his meticulous drawings that mapped networks of power
- Became a curator after his undergrad, and later became a reference librarian – so these expertise put him ahead of the curve in that he was an early knowledge worker
- Was active as a reasearcher and authored books on the drug war and panoramas – obsessed with scandal and international relations
- Began showing his work in mid 1990s. First at Drawing Center in 1996
- Would produve “narrative structures” on Iran-Contra Scandle, Harken Energy Scandal, Organized Crime, etc.

Slide 4 – Playfair Pie Charts

- And of course to return to week two – we examined Playfair's Pie Charts, The execution of which wrote the rulebook based off instincts and aimed at improving the comprehension of his research.
- However, we are in an era of computation now – so what does that mean for visualization? (and graphics for that matter?)

Slide 5 – Tree Map

- Beyond expected conversations about code – everything new is old again. Nathan Yau, dedicates a significant space in Chapter 3 of *Visualize This*, to discussing Adobe Illustrator and Inkscape
- Why are these programs important in visualization? Because not every tool ouputs in a neat and tidy manner – work executed on many applications is best exported as an .eps or vector format and then 'prettied up' in an illustration program!

Slide 6 – Illustrator

- While we might associate this kind of workflow with traditional illustration, it really does have much of what we need for visualization. Strokes, Fills, transparencies, good layer management and immaculate control over typography
- I want to make it clear – it is entirely possible to spend the rest of the paper working with pen and paper if that is your prerogative. As long as you are critical of your process, thoughtful and attentive about your means of production and can iterate your work from week to week – full steam ahead.
- I had a conversation with design thinker and sometimes teacher Adam Greenfield this summer and he passed along an adage that I am very fond of: “If you can execute your work in a rhyming couplet, that is fine by me” – that goes in this visualization course.
- So with all of the above said...

Slide 7 – Tools

- ...Today we are going to talk about picking the right tool for a visualization project.
- This lecture is going to draw on the advice from Nathan Yau, and diverge based off some of my personal interests.
- As Yau points out there is a world of options out there, some “out-of-the-box” and “click-and-drag” and others require rudimentary to involved programming. This overview will not be by any means complete – and I’ll talk about how you can help expand on it later in the coming weeks.
- Yau is also correct in stating that the key is to match your tool workflow to your vision
- My general advice, don’t worry about learning a tool inside out – you only need to learn how to solve a specific problem
- I come from a background in web programming and that milieu is very useful in that there is a pervasive culture of knowledge sharing – so learning how to use a tool is always tethered to learning how to troubleshoot it and knowing where to find direction (help forums, tutorials, code examples, precedents, etc. – sometimes even emailing the authors of projects)

Slide 8 – Google Charts

- Last week we discussed Hans Rosling and Gap Minder – now I’d like to draw your attention to the entire suite of tools associated with Google’s ‘motion charts’
- I mentioned last week that Google had an API for Visualization – what does API stand for? What might that mean in the context of Visualization?

<http://code.google.com/apis/chart/>

- Show rudimentary options

Get Started

http://code.google.com/apis/chart/interactive/docs/quick_start.html

- Free, documented and web ready

HTML5/SVG

<http://code.google.com/apis/chart/interactive/docs/>

- HTML5/SVG (aimed at cross browser compatability, standardized data formats for changing between chart types, standardized data formats)

Dynamic Data

<http://code.google.com/apis/chart/interactive/docs/queries.html>

- Can be tied to dynamic data streams / reflexive

Rich Gallery

<http://code.google.com/apis/chart/interactive/docs/gallery.html>

- Options!
- Pie, scatter, combo, line area, and bar charts are all types of graphs that could be realized in R – documentation here is probably a bit more straightforward

Pie Chart

<http://code.google.com/apis/chart/interactive/docs/gallery/piechart.html>

- Note the layout – example and code!
- Information on display (SVG/VML)
- WYSIWYG Example
- Code
- Javascript might be a bit intimidating – there is very little here! Most of the document is actually the data.
- Visualization Playground! Show example – can play with it.

Slide 9 – Smart Money Map

Treemap

- Anybody know what a treemap is?
- “Hierarchical data as set of nested rectangle.

<http://code.google.com/apis/chart/interactive/docs/gallery/treemap.html>

Additional Options:

- Show Geo Chart
- Candlestick Chart
- Additional Charts/Examples
- Hall of Fame

http://code.google.com/apis/ajax/playground/?type=visualization#pie_chart

- Return to playground – note many other examples (see dashboards/controls)

Slide 10 – Many Eyes

<http://www-958.ibm.com/software/data/cognos/manyeyes/visualizations/canadian-media-ownership-network-d>

Lead in – network map

- Important historical precedent – Wattenberg and Viegas (now working on visualization related projects for Google)
- Many Eyes! Site run under umbrella of IBM – social visualization platform
- 2005-2010 (sunset/legacy mode)

Cars for Clunkers Program

<http://www-958.ibm.com/software/data/cognos/manyeyes/visualizations/new-cars-purchased-during-cars-for>

- Note quantity slider in lower right corner and adjustment options
- Show data set!
- Click on ‘Visualize this’ – show word Map
- Site is kind of a social media platform

30 Years of Music Industry

<http://www-958.ibm.com/software/data/cognos/manyeyes/visualizations/30-years-of-music-industry-3>

- Show data selection
- Sort labels, data order
- Show data set! (switch to bar chart)

http://www-958.ibm.com/software/data/cognos/manyeyes/page/Visualization_Options.html

- Note range of options – contrast with topical tags
- Outlasted a similar service named Swivel (with pay account business model) – very important precedent
- Contemporary equivalent is <http://visual.ly> – explicitly a startup though.

Slide 11 – Exercise

- Run through Many Eyes test exercise with group

Slide 12 – Tableau

- Another commercial project – dataviz startup. Focused on Business Intelligence but also widely used in journalism.
- Comes out of Stanford – draws on a database visualization language called VizQL
- Founded in 2003 – opened up with a public product in 2010
- Interestingly enough, one of first American Companies to withdraw support from WikiLeaks (blocking their data from being used on the service): *"Our decision to remove the data from our servers came in response to a public request by Senator Joe Lieberman, who chairs the Senate Homeland Security Committee, when he called for organizations hosting WikiLeaks to terminate their relationship with the website."*
- Show: <http://www.youtube.com/watch?v=ZJlbN-jluz0>

Slide 13 – R Studio

- Just to provide some contrast to this stream of commercial services – R is an open source statistical visualization platform
- Launched in 1993 – is the “de facto standard” amongst statisticians. What does that mean? It is probably too technical for the majority of us mere mortals, but has deeply embedded principles when it comes to legibility and aptitude for letting data speak for itself
- We’ll (finally) be starting to use R next week – some good news (for us), a more user friendly development environment for it has been developed – where users have a more explicit connection between their code, data and graphical output
- So, we’ll hold off any examples for the moment as we’re going to have about six weeks of them – starting next week.

Slide 14 – Impure

- Provocative service launched last year by Bestiario – information design firm based in Portugal & Spain – web base ‘object oriented workspace’ (mention Max/MSP – Pure Data)
- <http://www.youtube.com/watch?v=ZdSgrFQmY74>
- Show main menu – building blocks
- Login – demonstrate Network, Surface 3D
- Demonstrate <http://www.elephant-path.com>

Slide 15 – Processing

- Project hatched at the MIT media lab in 2001 by Ben Fry and Casey Reas – extended out of some rudimentary work by John Maeda (project of his called Design by Numbers) – research group called Aesthetics and Computation Group

- Programming language based on Java, but intended as tool to allow artists to think like software engineers and vice versa
- Project has been wildly successful – and has been deployed in all kinds of contexts: from generative art, to custom interface design, to research tools, prototyping, even used in fabrication/fashion design. Literal blank slate, with low bar.
- Current development has seen advance of processing.js – a browser port of output – can't compete with HTML5, but is becoming more plausible for web over time
- Worldwide user base – many contributors and libraries for everything to facial recognition, to OpenGL rendering (3D graphics), to working with GPS data, etc.
- <http://processing.org>
- http://wiki.processing.org/w/Main_Page
- <http://blog.blprnt.com/blog/blprnt/just-landed-processing-twitter-metacarta-hidden-data>
- <http://casualdata.com/newsknitter/>
- <http://turbulence.org/Works/mypocket/>
- See: <http://processing.org/exhibition> for many more examples

Slide 16 – HTML5

- Forthcoming HTML5 standard will usher in an era of new interactivity, allowing in-browser interactivity that we used to associate with Flash
- Both of these standards are works in progress and are still not that widely supported across browsers (you'd have a lot more luck with Chrome than say IE 7)
- Many of the opportunities have to do with the canvas element – which allows for dynamic, scriptable rendering of images
- Similar to SVG, introduced by Apple within WebKit in 2004 – actually a proprietary alternative to an open specification. But appears to have a bright future in interactive contexts.
- Visualizations in HTML5 have only recently started to turn up, and won't really work across browsers.
- Some examples: <http://vis.robbymacdonell.com/stanley-cup/>
- <http://mashupbreakdown.com/>
- Point group at Chris Milk's video for The Wilderness Downtown: <http://thewildernessdowntown.com>

Slide 17 – Cartography!

- As I've mentioned, cartography figures prominently into visualization and unsurprisingly that tradition is generally handled through distinct tools in visualization.
- Cartography has opened up considerably in recent years, in what many have described as 'the democratization' of mapping – so what started with

MapQuest has branched out considerably with services like OpenStreetMap, Google's MyMaps and Google Earth service – which of course allows you to work in/export to major GIS formats

- Google Earth deserves special mention, for bringing the GIS paradigm to the lay user and also providing a surprisingly sophisticated foundation for another platform-based community – working to extend an open ended application.
- I want to focus on a few key services – OpenStreetMap – **Why is this service significant?**
- <http://vimeo.com/9182869>

“Where are the areas most in need of assistance, how do we get there, where are people trapped under buildings, which roads are blocked? This information is important to the rescue agencies immediately after the event, and to the longer rebuilding process. In many developing countries, there is a lack of good mapping data and particularly after a Crisis, when up-to-date information is critical to managing events as they evolve.”

-GeoEye shot and shared 3,000 square kilometres of high resolution satellite photography

- Community response, empowering – “trace primary and secondary streets, reference street names from archival maps, note the location of obstructions and geolocate the network of refugee camps that had sprung up” – data straight onto Garmin devices of first responders.
- Plug DIY Cartography:
<http://www.creativeapplications.net/theory/mediated-cityscapes-03-diy-cartography-theory>
- <http://cloudmade.com> – example of a commercial tool, good illustration how corporations are monetizing geodata.
- <http://urbansoundecology.org> – I used this for personal project that had specific cartographic needs (something muted, and not ‘corporate’ looking)
- <http://cloudmade.com/signin> >> edit map styles - tool for personalizing geodata, making maps match their context
- <http://mapbox.com/tilemill> – design, hosting, mobile friendly, personalized!
- <http://mapbox.com/showcase> – demo

Final Slide Cluster – Set up/Inspiration for Baseball Card Assignment

- No great resource for intros to stats! Familiar with phrase ‘inside baseball’
- Catastrophic failure of Boston Red Sox (cursed, beyond stats) – were nine games up on Tampa Bay Devil Rays at beginning of month and lost. Recent failure 2-3 times worse than [Buckner debacle!](#)
- Watch Pennant demo video

- Show Fry Salary vs. Performance (avid baseball fan – occasionally posts on the topic)
- Moneyball! Based on 2003 book by Michael Lewis, manager of Oakland Athletics. Pioneer of Sabremetrics.
- Quote from Sabremetrics manifesto (David Grabiner) "Bill James defined sabermetrics as "the search for objective knowledge about baseball." Thus, sabermetrics attempts to answer objective questions about baseball, such as "which player on the Red Sox contributed the most to the team's offense?" or "How many home runs will Ken Griffey hit next year?" It cannot deal with the subjective judgments which are also important to the game, such as "Who is your favorite player?" or "That was a great game."
- Show <http://en.wikipedia.org/wiki/Sabermetric>